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UNITED STATES
FEDERAL COMMUNICATIONS COMMISSION

706 JOINT CONFERENCE ON

ADVANCED TELECOMMUNICATIONS

MONTANA STATE UNIVERSITY

CULBERTSON HALL

BOZEMAN, MONTANA

WEDNESDAY, JUNE 21, 2000

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A P P E A R A N C E S

FACILITATORS:	Dave Fisher, Chairman Montana Public Service Commission
	Bob Rowe, Commissioner Montana Public Service Commission
	Nan Thompson, Commissioner Alaska Regulatory Commission
PANELISTS:	Tony Herbert
	Dr. Lynn Churchill
	Colonel Michael McCabe
	Mike Strand
	Ron Warnick
	Geoff Feiss
	John Zauher
	Nellie Bandelier
	Larry Wetsit
	Frank Fifield

P R O C E E D I N G S

MR. FISHER: Good afternoon. I'm Dave Fisher, chairman of the Montana Service Commission. On behalf of the Montana PSC, I'd like to welcome you all to our beautiful state, or as we call it, Big Sky Country.

Today we're pleased to welcome representatives of the Federal Communications Commission and state Public Service Commissions, all of whom have been actively involved in the Federal-State Joint Conference on Advanced Telecommunications. Joining us here in Bozeman are some staff and federal leaders who have worked very hard on the 706 Joint Conference. I'd like to recognize their participation in our Montana satellite hearing.

Montana Commissioner Bob Rowe. He's also chairman of NARUC, an ex officio member of the Joint Conference.

Alaska Regulatory Chair, Nan Thompson. Nan is also the Chair of the 706 Conference.

Emily Hoffnar from the FCC. Emily is also the primary federal staff of the Joint 706 Conference.

Jeff Richter, staff of the Wisconsin Public Service Commission. Jeff is also Chair of the state staff working on the 706 Joint Conference.

Bonnie Lorang from the Montana PSC is a staff member of the 706 State Conference group.

We also have with us from Montana Nancy McCaffrey, Vice-chair of the Montana Commission; Commissioner Gary Feland; and Commission staff Jay Driscoll, and Commission staff Rhonda Simmons. And on behalf of the Montana Commission, I'd like to express a sincere thank you to our staff for putting this together and the hours they've put on it. I think they've done an excellent job.

I'd also like to give a special thank you to VisionNet, who I understand has put in countless hours and is providing this -- their services to us free of charge, so thank you for that.

We appreciate the opportunity to host this Montana satellite collaborative, which we hope will showcase the status of advanced services deployment in our wonderful state. We also would like to welcome our co-hosts, the Wyoming and South Dakota Public Service Commissions, who have also been working very hard to make the Mountain West Regional Hearing a success.

Not only do we hope to provide a forum for today's panelists, but an opportunity to display many of the exciting advances happening in the world of telecommunications here in Montana.

In a moment we will hear representatives of government, small rural telephone companies, and Montana communities sharing with us stories of their efforts and

challenges to bring advanced services to communities in rural Montana. We hope that their experiences will not only demonstrate what access to advanced services means to rural states like Montana, but what can be done to promote further deployment of advanced services in rural America.

It is our hope you will remember your experience in Montana as we work together to ensure that rural America is not forgotten as we move forward in connecting all of America with advanced telecommunications services.

We're especially pleased that we are able to showcase in realtime one example of the exciting inroads Montana companies have been making in bringing advanced services to Montana. This Bozeman hearing is being web streamed and video broadcast to the Montana communities of Glasgow, Pablo, and Billings, as well as to the Little America Hotel in Cheyenne, Wyoming, by a consortium of small rural companies who through collaborative efforts are providing broadband service to Montana.

Through this interactive video broadcast by VisionNet, Incorporated and the Wyoming State Telecommunications Network, participants in four remote locations will be able to join us and share comments and questions throughout the day.

Reasonable access to advanced services is vital to the economic survival of rural America. We applaud the FCC

for initiating the 706 Conference and for going out into America to hold regional hearings to examine both the successes of and barriers to the deployment of advanced services. We're anxious to share our stories with you. Again, welcome to Montana.

Others that will be making remarks when I'm done are Betsy Allen, a representative representing Senator Conrad Burns; Liz Chang, who represents Senator Max Baucus; and Char Helmick, who is representing Congressman Rick Hill.

With that, Commissioner Rowe.

COMMISSIONER ROWE: I'm going to move over to the projector. I want to start by first of all thanking Dave and Nancy and Gary for their support for this project and again acknowledging the work the staff has done. Bonnie Lorang has done, I think, some of the most creative work in this whole area really ever since the 1996 federal act passed, and I like to call her "Bonnie Accessee" for all of the things that she's done.

I also want to recognize the work that Representative Hill, Governor Racicot, Senator Baucus, and Senator Burns have all done in this area. You'll be hearing about that in just a few minutes. You'll also be hearing from Tony Herbert on behalf of the administration.

I do want to single out Senators Baucus and Burns. I've worked very closely with their offices, and we're

very, very lucky to have two senators who are as Internet savvy as are they and who have really done a tremendous amount. I'm sure you'll hear from Liz that Senator Baucus is convening an economic development summit this weekend that's just really taken on some enormous momentum, and he's been very active in all these areas.

Senator Burns is, I hope everyone here knows, is a member of the bipartisan forum team that made sure that when the act was passed, it was a balance of universal service and competition provisions. And, in fact, he was the godfather of Section 706, was working on these issues as the drafting went forward back in 1995, and I'm sure we'll hear more about each of their efforts. We're really very, very fortunate to have their support for this project and their vision in all these ways.

I also want to again welcome Nan from Alaska. We think of ourselves as rural and talk about there's urban, there's rural, and there's frontier, and then there's tundra. They had quite an adventure with the field hearing in Alaska just a couple of months ago. In fact, there was a little federal-state tension on the back of a snowmobile going out for one site visit, but that's a story for another time.

And my good friend, Jeff Richter, from the Wisconsin Commission staff, who has led the Internet

analysis within our national organization now for a number of years.

I'm going to put up a couple Power Point slides. Some of you have seen these, and I apologize. When customers complain to me about digital divide issues, they're talking about an awful lot of different things, and they're all right. The way I've tried to lay those out -- again, some of you have seen this before -- is in terms of the network layers. Sometimes the concern is backbone, switch, loop. Sometimes it's the absence of the right kind of customer premise's equipment, whether it's a computer or Internet device. Sometimes it's the absence of applications that makes sense. Sometimes it's the absence of just the human capital and support.

And as to each of those issues, there are different problems. Is it the facilities don't exist? Is it they're exhausted or congested? Is it the price? Is it a quality issue, outages, or slow provisioning, can't get the T-1 when you need it, you can't get the technical support when you need it? All of these issues have been identified as digital divide type issues, and this is simply another way of looking at those.

Another way to look at it is in terms of density and demand; and if you live in a high-density, high-demand area, that's where the competition solutions are going to

take you the farthest, the market solutions.

Well, there are also high-density low-demand areas, and the first thing that the Joint Conference did in March was go to a low-income urban neighborhood in Washington, D.C. Well, there you may want to use economic development kinds of approaches to supplement the competition efforts.

Low density, high demand, we have some examples of that here in Montana. Customers want the service, but they may be in a remote, high-cost area. What are the solutions there? Are there new technologies? There are different views of whether there are technological fixes for that problem. Can you aggregate demand to push services further out? Is universal service a part of the solution there?

And then the low-density, low-demand area, where we really have to be creative and bring all of the strategies together.

What's been exciting in the Joint Conference process is that state and federal commissioners have gone out together to learn about the problems and learn about what's working, and the Telecommunications Act gives us at least four good sets of solutions:

The competition solutions under Sections 251 and 252 that requires companies to interconnect and deal with wholesale level issues.

The universal service sections under 254. Montana

receives almost $45M in total high-cost fund support, primarily to the smaller companies and a very small amount to U.S. West.

Or is it the Section 271 solutions that spell out the terms for a Bell operating company, such as U.S. West, to get into long distance? And in the western region, states are working together on, I think, a very innovative process to make the Section 271 requirements work for U.S. West and work for the competitors.

And then finally, the Hail Mary part of the Telecommunications Act is Section 706, where Congress, looking clearly years ahead of the time they were writing the act, said, "We want the FCC, we want the state commissions, to promote access to advanced services. We have our eye on something a lot bigger than plain old telephone service."

The Joint Conference was an attempt within this cooperative federalist structure to move that process forward, to be creative, to find out what the problems are, what the successes are, ask how we can support those successes going forward. Nan will tell you more about what they've learned.

There's a very lively, very good web page up. You can get to that through the FCC web page. You can get to it through the Montana web page. There's a survey in an effort

to collect data we encourage everybody here to participate in. The findings of this meeting and the meeting on Friday will be incorporated into that process. So this really is an opportunity to be creative, to aim high, and hopefully to achieve some very exciting things. Thank you. Nan.

COMMISSIONER THOMPSON: Thanks. I'm going to -- thank you for welcoming me here to Montana. I want to put this hearing -- this regional hearing in perspective for those of you that are participating here today and in Wyoming.

To put this regional hearing in perspective, this is the last of six regional hearings. The Joint Conference was appointed just last November by the FCC. There are five state commissioners and the five FCC commissioners, and together the ten of us have the mission of figuring out how it is we could ensure deployment of these advanced services nationwide, what could we do as regulators, as policymakers, to try and encourage folks in industry to make sure that everyone had -- could take advantage of what this technology could offer in terms of education, economic development, and lifestyle improvement in general.

We set about the task by doing two different things. One is these regional hearings, and this is the last of them. There were six. And the purpose of the hearing, again, is to listen and learn what folks are doing on a local level, to try and find creative success stories

and highlight them so that others could take advantage of that information. And also, to identify what the problems really were. To see if on a nationwide basis we could identify similarities that we as policymakers could do something to resolve.

The other part of the piece for us is data gathering, and Bob mentioned that we have -- it just went up recently. The National Regulatory Research Institute is compiling for us a data base, and there is a survey -- again, accessible through our web site that you can get to through the FCC's web site, and we encourage everyone to participate. It won't take more than five or ten minutes.

And all that data is going to be put into a web-searchable data base so folks other places, policymakers, folks in industry, anywhere in the country, if they have a community of a particular size, certain technology parameters they're working with, they can go in there and research what folks in other places in the country have done to solve those problems. We're hoping that by spreading the information that folks like you have developed on a local level, making that available nationwide, we can encourage people to try and think about different creative solutions.

So I'm looking forward to hearing from the panelists we have here today. It looks like a distinguished

group, and the experience we've had at the other regional hearings this week is tremendous. To me, the different ideas people come up with, the way -- the human ability to creatively and constructively solve problems when folks are able to collaborate, has been -- has been inspiring. I hope to use the information we get today to share with others other places in the country.

MR. FISHER: Next we'll hear from Betsy Allen from Conrad Burns' office. Betsy.

MS. ALLEN: Thank you, Commissioners. I'd like to thank the Joint Conference for this opportunity to speak here today. Unfortunately, the Senator could not be here today. He's back in Washington doing what he does best, working for Montana, but he sends these words.

"Members of the 706 Joint Conference and interested parties:

"As author of the Section 706, crafted during the development of the 1996 Telecommunications Act, the topic of today's hearing is critical to the future of this country. The pace of deploying broadband technology to rural America is exceedingly gradual. Today' hearing is intended to convince the FCC to act upon its Section 706 authority rather than to continue to drag their feet.

"Commissioner Bob Rowe and the Joint Conference on Broadband Access has provided this opportunity both in

Montana and Wyoming for testimony from witnesses that will expound on success stories and identify those barriers to deployment.

"Broadband deployment to rural America must be accelerated for electronic commerce to meet its full potential. Access is as important to our small businesses in Montana as water is to agribusiness, and our state faces unique challenges due to its vast distances coupled with low-level economic development outlooks. In reports last year, a mere 2 percent of Americans had broadband access. The FCC is adhering to statements of broadband deployment across the nation and refusing to invoke Section 706 authority. FCC inaction will not be allowed to dismantle Section 706.

"Montanans have not stood idly by and watched the "digital divide" grow. By pooling their limited resources, Montana's independent and cooperative telephone companies are doing great things. Consortiums such as MAIN, VisionNet, Skyland Technologies, and Montana's own Commissioner Bob Rowe are leading the way to conquer the challenges of telecommunications in rural Montana.

"In another step, aimed at increasing the availability of high-speed Internet access in rural America, I have introduced another bipartisan bill. Facilitating Access to Speedy Transmissions for Networks, E-Commerce and

Telecommunications or FASTNET. FASTNET is intended to relieve small telephone companies from some burdensome reports and accounting regulations. It would also compel the FCC to act promptly on small companies' requests for regulatory relief. It is my belief that federal regulations may be too burdensome for the large companies, but they're strangling the small companies.

"We have a lot of exciting things happening in Montana thanks to the Internet. Dot.coms are popping up at an exciting rate, and other folks are using the Internet to support their families. We need to make sure that the infrastructure in rural America keeps up with the pace. Thank you for all who are participating today. Just your presence is the signal to the FCC as to what Montana and rural America needs to shape our electronic commerce into the mold for success.

"Sincerely, Conrad Burns, United States Senator." Thank you.

MR. FISHER: Thank you, Betsy. Next we'll hear from Liz Chang, from Senator Baucus' office.

MS. CHANG: Thank you for having -- inviting Senator Baucus to this hearing. I know that he would have loved to have been here because it's an issue near and dear to his heart; and it's so good to see some people we've worked with closely, actually, in the very near past. I see Lynn

Churchill, Colonel Mike McCabe, Mike Strand, John Zauher, Larry Wetsit, and the rest of you who are so vital to Montana's venture into the digital age.

Let me read a statement for him that Senator Baucus wanted to make sure was available.

"Good afternoon. I'd like to thank you, Dave, and the FCC for putting together this forum and inviting me to participate.

"I very much appreciate the FCC's efforts to put together a national clearinghouse of broadband deployment projects and best practices by communities across the nation that build upon lessons learned by others.

"From a public policy perspective, Congress's goals are to ensure that broadband deployment is timely, that industry competes fairly, and that service is provided to all sectors and geographical locations of the United States.

"We have our own experts here today who will articulate Montana's existing structure and a vision for our future capability. I applaud their tenacity and dedication to this important responsibility. This is a charge that involves us all: individuals, businesses, health, education, utilities, agriculture, tribes, and government. It is in our best interest as a state to come to grips with how we will address this digital divide.

"From June 25 through 26, our state will

participate in the Montana Economic Development Summit in Great Falls. It is a gathering of Montanans representing different economic sectors who have pledged to work cooperatively and collaboratively in addressing the factors that hold our state's economy in check.

"Each of us must ask ourselves, What can I do to move our state forward? I am keenly interested in the Administration's and congressional initiatives that fund broadband development: loan guarantees, low-interest loans, and investment tax credits for broadband deployment. Additionally, increasing access, easing regulatory restrictions, and research and standards development are among my priorities.

"But we must move in quickly to harness the energy of this new economy. We have the will, we have the knowledge, and we have the desire. I look forward to your input and working with all of you to make this happen." Thank you.

MR. FISHER: Thank you, Liz. Before we go on -- I was asked by the court reporter and forgot to do so -- as we go through this hearing, if we could speak slowly and clearly and only one at a time, she would appreciate it. I'm sorry I forgot to mention that.

Next we'll here from Shar Helmick representing Congressman Hill. Is Shar here?

MS. HELMICK: Well, I don't know who else came from Helena today, but I wasn't sure I was going to make it. In time anyway. Congressman Hill also is in session today and would like to be here, but sends his regrets.

"Dear Friends: Thank you for inviting me to join you for this FCC-State 706 Joint Conference on Advanced Telecommunications Services. Unfortunately, due to the congressional schedule, I am unable to be with you today, but I'd like to share a few thoughts with you as you gather for this important conference.

"Technology is changing the world around us. From private business to government, from shopping to entertainment, from research to education, technological advancements have changed the way we communicate on every level. In rural America we must focus on improving our telecommunications capabilities in order to make sure that everyone will have the same opportunities to take advantage of all that technology has to offer.

"As Montana's representative, I'd like to express my appreciation to Montana's Public Service Commission and the Federal Communications Commission for providing this opportunity to bring together regional, state, and local representatives for a productive dialogue about the future of telecommunications. I hope that all the participants will benefit from the information that will be exchanged

during this hearing and that the contacts you make this week will have a positive impact on Montana's future.

"Thank you again for inviting me to attend this important event. Best wishes for a successful and informative conference.

"Sincerely, Rick Hill, Representative for all Montana."

MR. FISHER: Thank you, Shar. Before we get into our panel discussions, we need to break for about three, four, five minutes to get ready for that, so we'll be on break.

(Off the record.)

MR. FISHER: The first panel discussion, The Efforts and Challenges of Advanced Service Deployment, will be facilitated by Commissioner Bob Rowe.

COMMISSIONER ROWE: We're passing the microphone around for purposes of the transmission. What I'm going to do is, speaking slowly, introduce each of the panelists. They will give an introductory statement. Several of them, I know, will have Power Point presentations.

We'll have some follow-up questions and discussion up here, and then we'll move to discussion from participants, starting with questions from those here at Montana State, and then going sequentially to Billings, to Glasgow, to Pablo, and Cheyenne, Wyoming, and we'll work through in that order, and we'll spend about 45 minutes on

this.

We really do have a great panel to kick things off. Our first speaker will be Tony Herbert, who is the minister plenipotentiary for Governor Racicot on all things technological. He's the administrator of the Department of Administration. He's head of the Information Services Division, ISD to those of us who are state employees, and is responsible for the direction of information technology for the entire state. And ISD provides the operation of the state-wide voice, data, and video networks and management of the state central computing facilities.

Following Tony be Dr. Lynn Churchill of the University of Montana, so I guess we can say "Go Grizz" despite the hostile location here. Dr. Churchill is Director of the Information Technology Resource Center, or the ITRC, at the University of Montana; and the ITRC is an advanced technology, research, development, and training center which is recognized nationally and internationally for its projects using innovative technologies in both the public and the private sectors. He's also the principal investigator for the University of Montana's Internet2 initiative, and he's a research associate professor in the Department of Mathematical Sciences.

And batting cleanup is Colonel Michael, or "Mike," McCabe, and Colonel McCabe is a native Montanan who has

worked full-time for the Montana Army National Guard since 1984. Prior to his full-time involvement with the Guard, he was a practicing trial attorney and who probably has had greater trials in the last few years than ever in private practice.

He's held a number of positions in the Montana Army National Guard, including Chief of Staff, staff attorney, assistant personnel officer, and labor relations officer. In August of '99, he became the project officer for the Montana Army National Guard's Distance Learning Project.

This is a very exciting project, probably not something he thought he was enlisting for in 1984, but we're glad he's doing it now. And the project is going to commit nearly $5M, $4.5M, to establish an ATM-based network that connects 22 armories around the state carrying voice, video, and data. It will also be something of a community service. Colonel McCabe is going to be describing that exciting project as well.

So starting off with Tony Herbert. Tony, to what extent does state government in Montana now provide voice, data, and video networks? How have the networks evolved to where they are today? And I guess the obvious question there is, Where are they going?

MR. HERBERT: I have to say I think this is the first time I've been given five minutes to speak and then

told to speak slowly.

Thank you, Mr. Chairman and members of the Commission. It's my pleasure to address you today. As the fourth largest state in the country with the sixth smallest population, Montana has unique challenges in the deployment of advanced telecommunications services to its citizens. I would like to take the brief time I have with you today to discuss Montana's telecommunications services within state government. Very importantly, I want to discuss a new contract we have just signed with U.S. West to provide ATM services to ten Montana communities.

The Information Services Division is responsible for the management of voice, data, and video services for all agencies of state government and the university system. By statute ISD can also provide services for political subdivisions of the state and for certain nonprofit organizations.

State government is the single largest user of telecommunications services in the state. Today we have approximately 22,000 phones, over 10,000 PCs, 17 video systems, over 550 router locations, and we have services in all counties and in 130 communities.

We have three major network services, which are entirely provided to us by the industry with minor exceptions. We acquire these services through competitive

bidding or through direct purchases from tariffs, where applicable.

Our current voice network came into being in 1987, when we digitized our intercity services, and it terminates in 13 Montana cities. Initially, the leg crossing the LATA between Helena and Bozeman was provided through a state-owned microwave system. This microwave system saved us significant dollars versus leasing at that time. That leg of the network has since been retired and is now provided by AT&T and by Touch America.

The Montana Educational Telecommunications Network, or METNET, came into being in 1989, as we implemented T-1 compressed video into the cities noted on the map. Predominately located at university campuses, the network provides distance learning to university students, but is also used by state agencies to conduct business conferences. This network can also interconnect with five other distance learning and telemedicine networks in Montana, and we can connect with interstate locations through AT&T and U.S. Sprint.

Summitnet, the State and Universities of Montana Integrated Network, is the state's data communication network, and it came into being in 1995. It provides TCP/IP connections for state and university personnel in all 56 counties of the state and in 130 communities. U.S. West

provides frame relay services to 11 Montana communities, and our rural cooperatives provide backhaul circuits to our more distant towns.

We have just signed a contract with U.S. West for the deployment of ATM technology in Montana. This project, which has become known as Summitnet II, officially began last fall and has just culminated last week in a contract to deploy advanced services into Montana's largest communities. The goal of the project has been to support the growing needs of agencies and the university system, consolidate existing networks, encourage new investments, encourage cooperation among industry members, and lower or maintain current costs.

Our contract has been based upon the anchor tenancy concept, through which the aggregation of public needs drives investments in new technology by the industry. Through this effort, ATM technology will be available in nine new communities. This includes our larger cities of Billings, Bozeman, Missoula, Great Falls, and Butte. And I emphasize "larger" on the Montana scale. But also communities as small as Havre, Kalispell, Miles City, and Dillon. For the Commission's information, Miles City is a community of only 8,400 people, and Dillon boasts a population of only 4,000.

The map that you see here depicts the resulting

infrastructure that will be in place upon the completion of the network. I know it's very difficult to read there, but there are handouts. Please note that this network has portals to the Internet which are used by all users.

Quickly, the project has generally and specifically met the overall project goals, provides for the consolidation of networks, prepares us for the growth we anticipate in the future, and is doing so at a cost which approximates our current costs.

Perhaps the greatest benefit of this new contract is the deployment of advanced services into many Montana communities which would otherwise not see these services for several years to come. These communities are small on a national scale, but as the anchor tenant, the state has provided the incentive to help these new investments take place. As an example, the ATM switches are the technological platform from which other services like Digital Subscriber Lines services and LAN switching services can be operated. We are very excited about the economic development prospects this new environment represents to our state.

To quickly address barriers, I would just point out to you that mileage-sensitive pricing is problematic for a great state like Montana. If further penetration of advanced services into very rural areas is desirable, then

subsidies or incentives of some kind I believe are going to be necessary. That concludes my remarks. Thank you.

COMMISSIONER ROWE: Thank you. Dr. Churchill, what are the common issues in education, business, and other areas concerning telecommunications, and particularly the effective use of advanced technology in Montana?

DR. CHURCHILL: Thank you, Mr. Commissioner. I think one of the key issues that we'll see in this presentation is that the issues you brought up earlier are the same ones that we're finding with respect to both business and education. I'll wait two seconds here while he brings up the Power Point.

(Off the record.)

DR. CHURCHILL: One of the first aspects that Commissioner Rowe brought out earlier is the aspect, and one of the issues in Montana we deal with and have for some time, is the issue of infrastructure. Another issue has to deal from the standpoint of technical support, the people necessary to keep the infrastructure running and operational.

Another aspect is training, professional development, how we grow people to run those systems and to use those systems. And the way that we justify having those systems is to have content and applications that can utilize those and pay for their existence.

Next we have the issue of funding, which is one of the issues that we all fight within Montana from the standpoint, you know, what it's going to cost and what it may take to try and accomplish that task. And last but not least is the issue of policy.

This map -- and I understand -- I was expecting there to be a little larger picture. There is a -- this actually came from a set of maps at the Natural Resource Information Systems Montana map section in the state library. It is online if you want to go out there and look for it.

What I want you to notice is that we have certain pockets of -- places within the state in terms of large population centers. "Large" means somewhere between 10,000 and 100,000, are large pockets; and from that standpoint, there's about 12 cities or towns, I believe, that are above 10,000. There's over 400 communities though; and in that sense, if we start to look at the issue of communications, we have to be aware of the distribution of people across Montana and the challenges that they face in very small communities, especially when businesses have to justify implementation of an infrastructure and pay for it with those services.

Another aspect we have to look at is from the standpoint of wages in Montana. The last report that I had

is that Montana is 50th in the nation in terms of IT wages. So from the standpoint of looking at average IT wages, we're 50th in the nation. And as many of you know, we rank extremely low, we're 46th in the nation, in terms of average income. So from the standpoint of people being able to pay large amounts of money for advanced services, that's an issue we have to address as well.

We also have to look at it from the standpoint of moving populations. This is actually a representation of what's happening with respect to Montana's economy. We're finding out that very rural areas are losing populations very quickly.

The infrastructure challenges that I've observed were from both education and business and involve aspects of local loop. Looking at the issue of how we keep track of data traffic in Montana is another important part. So the issue of looking at how we're going to interconnect the various carriers is another issue.

And last but not least is the issue of looking at overall Internet access and what it takes for us to backhaul to places like Seattle and Denver.

With respect to local loop, we do have a lot of things going on, and there's been a tremendous amount of progress made by both rural telcos as well as U.S. West in terms of distribution and dissemination of DSL. We also

have things like LMDS, which is the wireless kind of communication that's being deployed as well; but, again, primarily within the major population centers. And last but not least we also see cable-based Ethernet kind of access growing in the larger population centers.

The local loop issues, though, are important because the equitable availability of broadband to extremely small communities or anyone living outside of five miles from a town is a major issue. And also from the standpoint of looking at the key components of equitable cost of broadband is another issue from the standpoint that if you are in a very small, rural town, the cost is usually quite high.

The issue of interconnects is one in which there's been some tremendous efforts going on in Billings in a -- nearly an operational connector soon from the standpoint of interconnecting the major carriers within Montana and Billings. There is as well another plan that's in place -- actually, a couple of plans that have to deal with one being created in Helena, another one in Missoula.

The interstate and Internet access from the standpoint of high-speed interstate connections to the major Internet points in Seattle, Denver, Minneapolis, and Calgary are the major options that we have to basically get online. The backhaul comes at a significant cost to Montana

citizens, businesses, and education. And last but not least, it's always a factor in discussions with potential technology-based corporations looking to come to Montana.

I want to share with you as the PI to the Internet2 project where the major Internet2 GigaPoPs currently reside. This is the June 2000 map. You'll notice a hole somewhere, right? Also, since Internet2 tends to rely on the Qwest backbone -- if you'll bring that up next. You'll notice another hole out there from the standpoint of the high-speed backbone for the Internet2 traffic.

What Montana needs to be competitive is to make a connection, is to multihome the state to Seattle, Denver, Minneapolis, and possibly Calgary. The major technical support areas we have to look at are basically listed there, and I can go very quickly through this, since we are speaking slower and not moving quite as fast; and what we basically have there is covering the range of everything from wiring to looking at programming to looking at everything from digital media, etc.

The most common delivery vehicles that we use out there as well from the standpoint of looking at training, professional development, we have developed professional development out there in order to meet the needs everyone else is facing in other advanced technology corporations. We as well have to meet the need from the standpoint of

justifying that we have a high-skilled labor force if we can't bring companies here.

The most common modalities for delivery are on-site, remote-site delivery, and online delivery, and these vehicles are extremely important from the standpoint of looking at a diverse way of delivering training and instruction across Montana.

The content and applications that we're looking for, we have a number of courses and programs currently being offered from MSU, U of M, and others, that I think it needs to be acknowledged that Montana is doing a considerable amount in that regard.

Research data streams, though, can push this, as well as streaming technologies. When we look at NASA data streams of 8 terabytes a day to be processed, it begins to paint a different picture from the standpoint of what we need for Montana.

Funding is an issue as well, and in that area we have to acknowledge the FCC, and the work they've done with E-rate has been a tremendous benefit to Montana's K-12 schools, and we are appreciative of that effort.

In other areas as well, we have to look at what's going to drive E-Commerce and what's going to happen from the standpoint of IP-based video, etc. Quality of service is an issue.

And last but not least is policy from the standpoint of looking at the kinds of things that we need to look at. Many of these areas -- we'll just go ahead and go through there -- are primarily issues from the standpoint of equity of access, equitable cost for services, looking at issues of educational pricing, especially if we have commodity pricing for bandwidth. It will basically be very difficult for education to meet those demands. He said stop. I'll stop.

COMMISSIONER ROWE: Our panel is doing a good job of setting an example of speaking at 56 kilobytes, where I was trying to use load voice compression.

Colonel McCabe, you learned an awful lot about telecommunications since becoming the project officer for the Distance Learning Project last year. Could you describe the project, and what have you learned most from it?

COLONEL MCCABE: Thank you very much for the opportunity, Bob. The first thing I'd start out by saying is the first thing we learned about kilobytes is they're not free, and that in Montana, when you buy kilobytes, if you're using frame relay, you pay for a full T-1 circuit, but you only get 56 kilobytes. For us in the Montana Guard, as we looked at what that was going to do for us in trying to train our soldiers, we immediately determined that the first thing we needed to look at was technology to solve the

problem.

The next lessen we learned is everybody has an expert and everybody's expert is right, and they're not going to change, and especially when you talk about equipment providers. They've got the piece of equipment that can do it and work, and they're happy to sell it to you, but we actually went out and got an independent who doesn't sell any equipment to give us a review of what equipment was involved and came up with the ATM network.

That's important -- if you go to the slide show, go to the next slide. As you look at the size of Montana -- and you're going to get tired of seeing this about Montana, but not half as tired as you are if you try to conduct training to 22 armories around the state of Montana and have to put in the windshield time. To go from Libby, Montana which -- the next slide -- is in the upper left-hand corner to Sidney, Montana, where we have another unit, could take you ten and a half hours, assuming that the weather was good and the traffic was good and, unlike this year, there wasn't any road construction. It's just a horrendous drive.

To conduct training in that environment, what that means for us is that we customarily have to put people on the road for anywhere from four to six months during the IDT or weekend drill periods, which we only have 48 four-hour sessions during the year to train our soldiers.

We are a low-density state of 4,000 soldiers and air personnel, but we're a high-density demand when it comes to the situation of the training we're required to provide. The technological proficiency required of our military members right now has become overwhelming. The amount of education they want us to have has become astounding, especially for officers.

There's two parts to it: traveling to go get the training to them; the second part is traveling -- the soldiers' travel to get the required training at other locations. Anybody who's flown into Montana knows what that cost is. The average cost for one of our soldiers to go to a school is $2,000.

The next slide. That shows a larger population area, which we could deal with and would be relatively easy to deal with if those were the only units that we had to deal with. Communication in that area is fairly good. The price structure is fairly good as well in terms of the services provided.

The next slide. As you look at the slides of our 16 remaining armories, you realize the amount of miles and distances involved. It's overwhelming. The price is astounding when you talk about communication. I will tell you, in my experience there are two words that make me extremely tired. One is "backhaul," and the other is

"mileage," because every time you hear them, the next thing is, "Yeah, how much is it going to cost?"

And to give you an example, Libby, Montana, for a T-1 circuit to our armory is $3,500 a month; and we have to go out through Idaho and back into Montana through Bonner's Ferry to get that connection because there isn't any surface communications or wire communications within 50 miles of Libby. On the eastern side of the state, we have some areas where it's $2,500 a pop as well, so it's expensive. That's why we looked at going with telecommunications.

The next slide, the LATA. The LATA makes no sense to us as a customer. I'm being very honest. The only thing that we can see that it does is increase cost. And as we started our system, it was an ATM system, it was going to be private because ATM capability wasn't offered through public circuits at that time. As we looked at that, that LATA increased our costs by $1M in equipment that we would have had to cross that LATA. We do have some security requirements that are unique. They do pose some difficulties when you talk about the concept of aggregated ATM in some of the other areas of the state.

The next slide. The 18 independent telecommunications providers in Montana that show up on that map have to be applauded for what they've done. We have learned how hard it is for them to do their jobs because

they have patiently put up with us asking questions: Can you do this? Can't you do this? How can we accomplish this into getting to our various armories? I have to applaud them. They are fantastic. U.S. West has been extraordinarily good to us as well and patient. But cost is a real driving factor.

Next slide. I only have one minute. It goes real fast, doesn't it? The VTC sites, there are plenty of VTC sites in the state of Montana. The difficulty is communicating with each other. There is not a standards-based VTC network, there is nobody that provides the scheduling for the entire state, and there is nobody that provides bridging capability. One of the capacities we're bringing to the state with our network is that we will have the ability to bridge with every network in the state of Montana in order to provide communications if necessary.

The next slide is just a summary of where our armories are located and where we're going to ultimately have locations. Three communities are involved in share usage, which means they're footing the bill for this as well. That's Miles City, Libby, and Flathead Community College in Kalispell. We're proud of that effort. We really believe that as you look at the situation in Montana, as you talk about distance learning, you really have to consider subsidies and some programs such as the recently --

recent bill introduced into Congress that talks about subsidies for the rate structure out here because we don't have the population to support it any other way. Thank you.

COMMISSIONER ROWE: Thank you all very much. You heard a lot in this panel, both about the tremendous challenges and about some exciting things that are happening. Are there questions first here at MSU?

COMMISSIONER THOMPSON: I have some if -- do I need the mike to ask them or can I speak loudly enough?

COMMISSIONER ROWE: Probably so these folks can hear you, unless they can read lips.

COMMISSIONER THOMPSON: This is really a question for each of you to answer, perhaps, in turn; but what do you see as the most significant regulatory barrier to doing the type of deployment that you've been trying to do? What can we as policymakers seek to change to make your jobs easier?

MR. HERBERT: The most significant regulatory barriers. I think that the need for continuing to encourage competition is really important wherever we go because I think that's how ultimately we're going to get to the kinds of -- a lot of services that we want. However, I think you have to consider and continue to work on incentives of some kind for companies to go to the very rural parts in places like Montana.

I mean, we're able to do some things possibly

through aggregation, "we" being state government, and see some services show up in our larger communities; but I think it's extremely difficult when we talk about the costs associated to the services that we're talking about to get to these very rural areas.

I think programs like the E-rate, incentives, tax incentives. Montana has provided a recent bill out of their session last year for I think it was a $2M rebate program for investments in advanced services by companies, and I think those sorts of things need to be there or I don't believe companies are going to easily be able to do their best.

So I think you have to have that balance. You have to continue to support competition, but it's a two-way street, and it's going to be like that I think for a while. Very rural areas are what we're after.

DR. CHURCHILL: I think I'd have to say that, first of all, I'm very much concerned in terms of cost of services for education. I suspect it will end up in a commodity traffic model for pricing, and we need to be able to make exceptions for education because if we're going to be involved in K through adult education and receiving what they should from the standpoint of understanding this world and the rapidity at which it changes, it's going to be very much media based; and for education to try to foot the bill

from the standpoint of meeting that need, I don't think it's going to be feasible.

COMMISSIONER ROWE: What's the significance of a commodity model as opposed to the model that's currently used?

DR. CHURCHILL: Well, basically, the current needs will be priced according to a fixed capacity. So, for instance, for 56k, T-1, or DS3, those kinds of capacities say that you have this amount of bandwidth for this period of time per month, and you can put as much traffic over that as you want up to that capacity. So if you were able to fill a T-1 at 1.54 megabyte, that you would be able to deliver that for the entire month at the cost of your T-1, if you had full capacity.

The problem is that I don't think we're going to stay there. I think the movement right now that we're seeing is a trend towards what we call commodity pricing, where you pay per megabyte of traffic going across a circuit; and when you do that, you are beginning to look at the whole issue of delivery of media and the potential impact on the end user. So I'm not necessarily against that model, and I see it actually happening right now. Those pricing models are currently happening to people that are delivering streamed media for both storage and delivery.

So as we look at that, what we have to say is that

if that's the model, that if we don't have educational price breaks and policy to help with research and education, I don't believe we're going to be able to afford it.

COLONEL MCCABE: I'm really not going to offer an opinion on that. I've talked a little bit about the LATA, but I'm primarily an implementor who has just faced the issues. I don't care why they exist; but if there's regulations that interfere or can't be understood or become too complex that you need a lawyer to explain them to you, all they're going to do is add costs to the end users, and those have to be considered for elimination.

COMMISSIONER ROWE: Other questions from here in the audience in Bozeman? Questions?

(No response.)

COMMISSIONER ROWE: Are there any questions in Billings? Let's go to Billings first.

(No response.)

COMMISSIONER ROWE: Nothing in Billings. Glasgow? Pardon me. Billings, any questions in Billings?

(No response.)

COMMISSIONER ROWE: Glasgow, any questions?

AUDIENCE: We have a question in Billings.

MR. HERBERT: She said she didn't.

COMMISSIONER ROWE: She said she didn't have any questions. Any questions in Glasgow?

(No response.)

COMMISSIONER ROWE: Pablo?

PABLO: No questions.

COMMISSIONER ROWE: And Cheyenne? In Cheyenne, any questions in Cheyenne?

CHEYENNE: No questions in Cheyenne right now. Bob, this is Steve from Cheyenne, and we are having some difficulty hearing you. You really need to get the microphone close to the speakers.

COMMISSIONER ROWE: We're giving you some more volume.

(Off the record.)

COMMISSIONER ROWE: What's the best way for government either to assent or to participate in deployment; and again, particularly in rural areas? If there were some examples each of you provided, you might want to come back to them.

MR. HERBERT: Well, you know, my answer is -- and the anchor tenancy concept that I spoke about earlier, or the Summitnet II project, is a good example -- I think government should look at itself as trying to be an anchor tenant for new technologies and to help get those into rural locations. I mean, as the largest user, that's a good place for it to go. It has to be able to aggregate traffic, though, in order to do that, and the more traffic it aggregates the better that ability really will be.

I think government also needs to encourage

cooperation among companies. I think that we -- we in Montana -- and this is true, I'm sure, in other states -- we have some areas where we can improve in that regard, regarding our rural communities and our -- our RBOCs, and the more they work together to provide common kinds of services the better in the end services show up for citizens. So I think there are things the regulatory side of the house can do. Maybe that's one of the things that you can also be looking at.

DR. CHURCHILL: I think one of the areas that as well to be looked at -- and Tony brought up a good point, and that is the fact that Summitnet II is actually a public-private partnership. But one of the things we've been confronted with over the years is the co-investment in a lot of activities where we mix both public and private funds; and in that way, if we were looking at trying to aggregate traffic of both public and private traffic together to build circuits, to build facilities together as a co-investment, I believe that we may have to loosen some of the restrictions in that regard in order for small populations across large geographic regions to be able to accomplish what it is they need to do to provide equitable service and access.

COLONEL MCCABE: From my experience over the last year, what I would really tell you is that we need to work on

improving the communications and get away from what I call the territoriality concept. There ought to be as many incentives as possible to say that anytime we deal with each other, we ought to look for how we can cooperate, and I think that's what Dr. Churchill was saying as well and Tony. Cooperate so when we spend a dollar, it's benefitting as many people and as many organizations as possible.

How do you do that? I think you really -- it's going to take principally state government to continue to develop the rapport and some form of an open forum where somebody such an outsider coming into the state can go to that forum and say, "Hey, this is what we'd like to do. How can we achieve this?" And then through a cooperative effort, we can come up with an answer that won't intimidate a potential investor in Montana to say, "Too many hurdles. Not enough technology." You get the bad public graft, and then after a while they stop coming to talk to you at all.

COMMISSIONER ROWE: If there are questions from the audience, if you could put a hand up, I'll be sure to recognize you.

Colonel McCabe, you've become a telecommunications expert. You're also -- you're now wearing an economic and community development hat as well. That's a new role, working with people in Libby or Miles City, for example. How does that work out?

COLONEL MCCABE: It's been really difficult, and it's been an eye-opening experience for me, and what I would really have to tell you is that I believe that government and any agency related to communications needs to get down to the communities. Educate them on what the capabilities are, educate them on rate structures, talk about the opportunities that are available. Certainly encourage them to look at becoming proficient in writing grants.

And then I really think that we need to come up with what I would call an economic business model for communications in communities so that they can look at it and say, "If we're going to have a shared use classroom or a distance learning classroom in this community, it's going to cost us this amount. And then what is it we want in terms of an audience to hear and what sort of a need do we have to provide and what sort of resources do we have that could go into that?" So that your content goes where it needs to go in the volume that it needs to do, and then increases the interest for the use.

You know, when we started with TVs, nobody wanted to watch TVs because there wasn't any content. Well, after a few people got TVs and started watching it -- I grew up watching the Chicago Black Hawks, you know, on TV because we got WGN. Guess what, pretty soon there were more TVs; and after a while, the content improved.

The same thing is true of our rural communities. They need to have the help and planning out there so that they can come up with an effort and the community involvement. It can't be done simply stepping in from the outside because I'll tell you what, even as the Guard is a member of so many communities, when you come in and say, "We have money. We'd like to do this." they still look at you and say, "Yeah, right. What's the catch?" They need to understand what the catches are and develop a plan.

COMMISSIONER THOMPSON: Dr. Churchill, I was intrigued by your map with a hole in it where Montana is, and I'm wondering what interest you think will need to be aligned, how is that problem going to get solved for Montana? How do you get a GigaPop?

COMMISSIONER ROWE: Is it pronounced "GigaPop" or "GigaPop"?

DR. CHURCHILL: It depends on where you're from. I think, actually, that to solve that problem it's a public-private partnership as well as an interagency solution. I would believe it would probably take something from the standpoint of looking at not only putting the pipe in place, which could come through a National Science Foundation initiative, from the standpoint of getting the necessary funding in place to accomplish that task, but then you also have to look at, Who are the potential carriers and

participants on the private sector side that can also facilitate that process? That might be something from the standpoint of looking, like, at Qwest and the relationship that I understand is growing with Touch America since they have the pipes that are big enough to solve that problem.

We as well would look at the issue of making it a comprehensive solution. A big pipe without having people that can run it is another issue. So I would hope that we aren't shortsighted, that we look at this as possibly being a Department of Labor, the H1B kinds of issues and funding there; that we might look at it from the standpoint of the Department of Education in both K-12, university, and adult learning; that we might look at investment from the labor unions for retraining.

I think if we look at it from the standpoint of meeting the needs, of solving the infrastructure problem, taking care of the issue of how you're going to run it and manage it, the technical support standpoint, making sure that you get people ready to be able to use it through appropriate training, and look at those applications of the NASA funding projects or the Department of Energy or other kinds of stuff that will justify its existence.

So I think if we look at this as an interagency strategic plan by both federal and state and private sectors, then I think that we have a chance of getting it

done.

COMMISSIONER ROWE: Questions from the audience?

(No response.)

COMMISSIONER ROWE: Following up on that, there has been a lot of discussion about Internet network access points, and that's a term that apparently means a lot of different things to different people. I would be interested in comments on what level or quality of external Internet access might be required; and more specifically, what would be -- when we say "GigaPop," what's the definition or definitions?

MR. HERBERT: Well, I'm going to hand this to him, and he'll give you a real technical answer probably. Something very large, I know that. I think that what Montana is after is not to dissimilar, though, than what many entities in Seattle or Denver are after. I mean, exactly the technical characteristics of that I'm not certain of; but to Lynn's map and to the good points he makes, you know, we have that hole. I don't know if we have to have a GigaPop right here, but we have to have at least some highways to get us to those locations. Maybe they're toll roads, maybe they're subsidized somehow so that we have access to those other locations that can get us out, that cover our distance problems.

DR. CHURCHILL: I guess to try and give a fairly short,

concise statement of what a GigaPop is, basically it involves two major things. Number one is significant bandwidth from the standpoint of access to probably a minimum of OC12 connectivity. OC12 is about 640 gigabytes per second; and when we start looking at that kind of capacity, it's important to realize that for research, for what we call IP multicast and those kinds of applications of high-quality video and other kinds of applications, it's important to have big pipes.

A GigaPop does something else. It also aggregates providers from the standpoint of Internet providers, such as the major ones like MCI, View-U-Net, others that are the major Internet providers of circuits and services that basically connect the entire world. The major ones that we talked about are places where those kinds of providers come together to provide those services to Internet service providers and to the various telecommunications carriers.

So by placing something like that in Montana, actually my recommendation is that it be a distributed GigaPop so that we serve -- having aggregation basically to meet the needs of both eastern and western Montana. Those distances are significant.

And it does something else too. By building two, you build redundancy; and one of the things that we have to look at is that being isolated out here, any of our planning

should be looking at redundancy so that if one major circuit goes down or one major center goes down, you're still operational. So it's in that context that I state if we plan correctly, I think we can have multiple providers and be what we call multihomed to more than one major other gigabyte.

COMMISSIONER ROWE: Let's go around one more time. Any questions here at MSU? In the back. Mr. Feland.

COMMISSIONER FELAND: Mr. Commissioner, maybe my question goes to the FCC or somebody, whoever; but our invisible LATA line that runs down through the middle of the state, it seems to me if we could do away with some of that stuff and allow the competition to cross, maybe it would help plug that hole that we've got out there. I don't know. If somebody could answer, Why can't we do it, and who has the ultimate say on telecommunications, is it the state or the FCC?

COMMISSIONER ROWE: The question is about the LATA boundary invading Montana east and west and who decides.

MR. HERBERT: Well, I'm not sure that I'm the right person to answer that.

COMMISSIONER ROWE: Tony doesn't decide.

MR. HERBERT: I believe that's an FCC issue. I think the FCC put the LATA line in place. I would agree that it needs to be reviewed. It's been there -- it was a curious